UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

UNITED STATES OF AMERICA,

        Plaintiff,

v.

MUSTAFA DEVILLE REYNOLDS,
aka, "J,"

        Defendant.

_____/

Case No. 1:20-cr-24

Hon. Paul L. Maloney
United States District Judge

DEFENDANT'S SUPPLEMENTAL BRIEF IN SUPPORT
OF MOTIONS TO EXCLUDE EVIDENCE

The defendant, Mustafa Deville Reynolds, through his attorney, Sean R. Tilton, Assistant Federal Public Defender, files this supplemental brief in support of his motion to exclude evidence under Federal Rule of Evidence 702 and his Motion to Exclude Evidence under Federal Rule of Criminal Procedure 16. As discussed below, the book "Mobile Network Forensics" (Attachment A, Excerpts from Mobile Network Forensics) is not a peer review of TRAX, as that term is used in the law.

Mr. Reynolds primarily relies on his prior briefing, particularly his reply in support of his motions to exclude evidence (ECF No. 109). That reply explains in detail why TRAX fails the *Daubert* standard, and why the government's untimely disclosures require exclusion. However, based on the evidence at the continued hearing on August 16, 2021, Mr. Reynolds makes the following additional points.

In the event that the Court does not exclude the evidence, Mr. Reynolds is requesting an adjournment of the trial of at least an additional sixty days to investigate, corroborate,

compare, and review the approximately 50,000 TRAX maps and data points disclosed on July 15, 2021, and the additional approximately 50,000 TRAX maps and data points disclosed on July 26, 2021.

1. TRAX has not been peer reviewed

At the hearings on July 23 and August 16, 2021, TRAX developer Sy Ray ultimately offered one source authored by a scientist to support the government's claim that the software had been peer reviewed, the book "Mobile Network Forensics." On August 16, the government stated that it did not have the book, so the relevant portions have been attached.

"Mobile Network Forensics" does not meet the *Daubert* "peer review" standard. Peer review is an academic process that "'conditions publication on a bona fide process' of review by other scientists and experts in the field." *United States v. Gissantaner*, 990 F.3d 457, 465 (6th Cir. 2021) (quoting *Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1318 n.6 (9th Cir. 1995)). "Peer review contains its own independence, as it involves 'anonymously reviewing a given experimenter's methods, data, and conclusions on paper.'" *Id.* (quoting *United States v. Mitchell*, 365 F.3d 215, 238 (3d Cir. 2004). "When scientific research is accepted for publication by a reputable journal following the 'usual rigors of peer review,' that represents 'a significant indication that it is taken seriously by other scientists, i.e., that it meets at least the minimal criteria of good science.'" *Gissantaner*, 990 F.3d at 465 (quoting *Daubert*, 43 F.3d at 1318).

"Mobile Network Forensics" is a wide-ranging, general overview of its subject matter. TRAX is discussed only in Chapter Seven. That chapter describes several
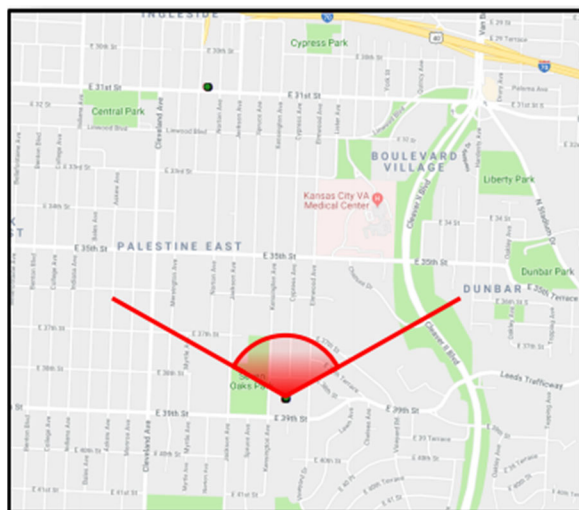
"analytical methods." These are "Forensic Speaker Recognition, Speaker Spotting," "Correlation of IRI and CC," "Packer Service Spotting, Packet Traffic Validation," "User/network tracing," "KPI Benchmarking," "Service Activity Reconstruction," and "Target Positioning—intermediate and periodic localization." The book gives examples of "Processing Tools" for each method. TRAX is the example processing tool for "Target Positioning." The book spends approximately five pages explaining the different functions contained in the TRAX software, including CDR aggregation. The book does not mention—much less review—the controversial aspects of TRAX, such as the fact that it is the only cell site analysis tool that uses a radiation pattern rather than a wedge shape, or the fact that it uses an algorithm to estimate the size of cell sectors without accounting for many relevant factors. TRAX is such a minor part of the book that neither TRAX nor ZETX is listed in the index.

Additionally, Dr. Sharevski's expertise is not in radio frequency. His Ph.D. is in "Interdisciplinary Cybersecurity." DEPAUL UNIVERSITY, *Faculty and Staff Information— Filipo Sharevski*, last accessed on August 18, 2021, available at https://www.cdm.depaul.edu/Faculty-and-Staff/Pages/faculty-info.aspx?fid=1341. His biography on the DePaul University website describes him as "a cybersecurity researcher and tactician who constructs and manipulates reality as it unfolds across the cyber-physical spaces and within power structures, particularly focused on social engineering, reality interventions, resistances, and cyberwarfare." *Id.* Because his specialty appears to be cybersecurity, it is unclear at best whether he would have the radio frequency expertise to critique TRAX's methods.

Accordingly, Mobile Network Forensics does not review TRAX's "methods, data, and conclusions on paper." TRAX did not submit its theories—that the amoeba shape is an accurate way to represent cell sectors, and that cell sector sizes can be estimated based on its algorithm—and its supporting data for review. These theories were not anonymously reviewed by experts in the field, and no reputable journal chose to publish TRAX's conclusions. Thus, TRAX fails to meet the peer review factor, as described by the Sixth Circuit in *United States v. Gissantaner*, 990 F.3d 457, 465 (6th Cir. 2021).

2. TRAX's methods are not generally accepted

As noted at the August 16 hearing, the United States Attorney's Office for the Western District of Michigan is currently seeking to admit a different and contradictory theory of cell site location analysis in another case in this district. *United States v. Trotter*, Case No. 1:20-cr-00186, (ECF No.47, PageID.114-146). In that case, the government seeks to use FBI Special Agent Joseph Raschke's open-ended wedge or pie shape cell site analysis. (*See* Figure 1. Example of open-ended wedge taken from Special Agent Raschke's report dated August 3, 2021). As noted on the TRAX website and Dr. Jovanovic's report, TRAX is the only cell site analysis software that does not use the wedge or pie shape. During his testimony, Sy Ray rejected use of the wedge or pie shape. (ECF No. 106, *Daubert* Hearing Transcript, PageID.806, pp. 37).

Figure 1. Example of open-ended wedge taken from Special Agent Raschke's report dated August 3, 2021

Dr. Jovanovic testified that TRAX's amoeba or "horizonal plane" maps are not used in academia or by radio frequency engineers in the field. The fact that Special Agent Raschke also does not use the amoeba shape shows that it lacks general acceptance, even in the law enforcement world. Further, the United States Attorney's Office for the Western District of Michigan has not even uniformly adopted TRAX's amoeba or "horizontal plane" and is contemporaneously pursuing the use of an entirely different and contradictory method of cell site analysis in another pending case.

Additionally, although both Special Agent Raschke and TRAX use shaded areas, these areas have very different meanings. As the testimony at the hearings established, the shaded areas in TRAX are meant to estimate the range of the cell sector, i.e. the area where the phone was when it made the call. In contrast, in Special Agent Raschke's maps, "the shaded arc solely indicates the general direction of radio frequency signal." This open wedge indicates the direction of the cell site, without attempting to limit its range.

Contrasting this mapping with the government's Exhibit 101 demonstrates TRAX's problematic nature. As Sy Ray testified on August 16, 2021, Exhibit 101 is a map of the maximum range of a cell sector. Exhibit 101 resembles the open-ended wedges used by Special Agent Raschke. TRAX's algorithm then takes this maximum range and limits it based on the number of other towers in the area. To the extent that a smaller area is more "inculpatory,"[1] TRAX is much more inculpatory than traditional cell site analysis using open-ended wedges.

Exhibit 101 also demonstrates that TRAX uses "granularization." Granularization is "estimat[ing] the range of certain cell sites based on a tower's location to other towers." *United States v. Evans*, 892 F. Supp. 2d 949, 955-956 (N.D. Ill. 2012). That is exactly what the TRAX algorithm does, as described by Sy Ray. TRAX counts the number of other cell sites in the towers maximum range and estimates the range of the cell site based on that number. "Granulization theory has not been subject to scientific testing or formal peer review and has not been generally accepted in the scientific community." *Id.* at 956.

3. *United States v. Hill*, 818 F.3d 289 (7th Cir. 2016), does not support the government's position

At the hearing, the government argued that *Hill* supports its position. Specifically, the government relied on *Hill*'s statement that "Historical cell-site analysis can show with

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[1] Whether a smaller area is more or less inculpatory depends on the facts of the case. For example, a smaller area could be exculpatory, if the crime scene was outside the borders of the cell site. Accordingly, it is not correct to say that merely erring on the side of larger areas is "exculpatory" and addresses the defendant's concerns. The question is whether TRAX is accurate and reliable. As Dr. Jovanovic testified, you could increase the accuracy rate to 100 percent merely by setting the size of the cell sector to the maximum range, but that does not mean that using the maximum range would be a fair and accurate representation of the cell sites.

sufficient reliability that a phone was in a general area, especially in a well-populated one." 818 F.3d at 298.

However, as Mr. Reynolds has previously explained, *Hill* does not support the government's position. The relevant question is what constitutes a "general area" under *Hill*? In *Hill*, the court determined that "the jury could reasonably and reliably infer that . . . Hill was within a five-mile radius of the cell tower." *Id.* at 298. A circle with a radius of five miles has an area of 78.54 square miles. Cell sectors have 120 degree arcs (i.e. one third of a circle), so a cell sector with a five mile radius would cover an area of 26.18 miles. Accordingly, the "general area" described in *Hill* is an area larger than 25 square miles.

This "general area" is consistent with what the Sixth Circuit has approved for cell site analysis. *United States v. Pembrook,* 876 F.3d 812, 824 (6th Cir. 2017) ("the calls established that the phone owners (from Philadelphia) were in the proximity of Medawar Jewelry (Plainfield Township, Michigan, near Grand Rapids) at noon, Tapper's jewelry store (West Bloomfield Township, Michigan, near Detroit) at 5:00 p.m., and New Buffalo, Michigan, the night before. At this level of geographic distance, cell-site analysis is established as reliable."); *United States v. Reynolds,* 626 F. App'x 610, 617 (6th Cir. 2015) (allowing evidence that calls were made "10 and 15 miles away from the Reynolds residence . . . approximately 20 miles away from the residence; and . . . 6 to 8 miles away" to show that callers were not at the residence).

The areas that TRAX maps are far smaller than 25 square miles. Rather than resembling the "general area" in *Hill*, they are almost identical to the "granularization" in *Evans*. Accordingly, *Hill* does not support the government's position.

At the hearing, the government stated that it intended to use cell site location only for limited purposes. The government stated that, for example, it only wished to show that two cell phones were connected to the same tower when they were communicating. If the government wishes to show that, it can accomplish that without using TRAX. The government can simply use the call detail records to show both phones connected to the same tower without presenting TRAX's estimate of the size of the cell sector. The government should not be allowed to present TRAX's misleading estimates to the jury simply because it claims that it only intends to show that the callers were in the same "general area."

4. Dr. Jovanovic's testimony shows how the government's untimely disclosure prejudiced Mr. Reynolds

At the hearing, the government argued that Mr. Reynolds failed to propose an error rate for TRAX. On cross-examination, Dr. Jovanovic testified that it would take him a year to independently test TRAX's error rate.

The government began using TRAX in this case in September of 2019.[2] On February 4, 2020, the government's case agent testified about the TRAX analysis to the Grand Jury to obtain Mr. Reynolds' indictment. On February 20, 2020, Mr. Reynolds requested discovery from the government under Rule 16, including the results of any tests or experiments.

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[2] Six KMZ files have a "date modified" of 9/4/2019. Another six list 9/9/2019 as the date modified. Five have a date of 2/3/2020. Finally, nine have a date of 4/19/21.

Accordingly, if the government had provided the TRAX files when Mr. Reynolds requested Rule 16 discovery—or at least informed Mr. Reynolds that it intended to present evidence from TRAX—Mr. Reynolds would have had the time to try to calculate an error rate for TRAX. Instead, the government did not disclose that it intended to present cell site analysis until days before trial was scheduled to begin and did not turn over the KMZ files until July 15, 2021—weeks after Mr. Reynolds had filed his *Daubert* motion. These untimely disclosures prejudiced Mr. Reynolds's ability to challenge TRAX at the hearing.

Mr. Reynolds believes that the evidence at the hearing demonstrates that TRAX fails the *Daubert* standard. But to the extent that the lack of an alternate error rate is a factor,[3] Mr. Reynolds was prejudiced by the government's untimely disclosures, providing another basis to exclude the evidence.

Therefore, for the reasons in this brief and his prior briefing, Mr. Reynolds respectfully requests that this Honorable Court exclude any expert testimony by the government regarding location data retrieved from cell phones, cellular records, and digital services.

5. If the Court does not exclude the evidence, Mr. Reynolds requests additional time to prepare for trial

If the Court does not exclude the government's evidence, Mr. Reynolds requests additional time to prepare for trial. Since July 15, 2021, the government has disclosed

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[3] Although Dr. Jovanovic was not able to calculate an exact error rate, he was able to determine that the error rate "cannot be anywhere near" Sy Ray's estimate. Accordingly, there is no known error rate, and the potential error rate is high. Thus, the "known or potential error rate" factor weighs in favor of excluding the evidence.

approximately 100,000 data points and maps or horizontal planes contained in two different versions of the TRAX software. Defense counsel was first notified about TRAX's April 2020 software update during the hearing on July 23, 2021. The government's witness, Sy Ray, testified about significant changes in the software that were included in an April 2020 update. Mr. Ray also testified about differences in the accuracy between maps produced prior to April 2020 and after the update.

Mr. Ray testified about varying accuracy levels if there was corroboration of the maps or data points. However, he testified to a 95% accuracy rate of the TRAX maps created after the April 2020 software update, if there was corroboration. Mr. Reynolds has had the approximately 50,000 maps created with the software update for less than one month, since July 26, 2021. Mr. Reynolds needs time to investigate and corroborate the maps so that he can adequately defend his case.

Additionally, Mr. Reynolds needs an opportunity to compare the approximately 50,000 maps and horizontal planes produced prior to the software update and the additional 50,000 maps and horizontal planes produced after it. Dr. Jovanovic testified about a significant change in at least one horizontal plane on the night of August 20, 2019.

In the event that the Court does not exclude the evidence, Mr. Reynolds is requesting an adjournment of the trial of at least an additional sixty days to investigate, corroborate, compare, and review the approximately 50,000 TRAX maps and data points disclosed on July 15, 2021, and the additional approximately 50,000 TRAX maps and data points

disclosed on July 26, 2021. The requested adjournment is necessary so that Mr. Reynolds

can adequately prepare his defense.

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Respectfully submitted,

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Dated: August 19, 2021